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REVIEW ARTICLE

Changes in the use of cosmetics worldwide due to increased use of masks in the coronavirus disease-19 pandemic

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Abstract

Background: According to recent experience, people are willing to wear masks to protect themselves from environmental issues such as infections, allergies, and fine dust such as SARS in 2003, swine flu A (H1N1) in 2009, and COVID-19 in 2019.

Objectives: The objective of this study was to investigate the changing conditions of cosmetics use worldwide due to the increase in mask usage.

Methods: This review paper is a literature review, and a narrative review approach has been used for this study. A total of 300–400 references were selected using representative journal search websites such as PubMed, Google Scholar, Scopus, and RISS, of which a total of 39 papers were selected in the final stage based on 2006–2021.

Results: Masks must be worn due to environmental issues and/or infectious diseases, for example, COVID-19. Skin troubles were dramatically increased by the increased use of masks. Additionally, research-related natural products for skin soothing ingredients and makeup products were suggested.

Conclusion: This review is expected to be used as an important marketing material for new changes in the cosmetics market by clearly grasping the needs of consumers in the beauty and cosmetics industry from the viewpoint of using masks after COVID-19.

KEYWORDS
cosmetic change, COVID-19, mask, skin soothing

1 | INTRODUCTION

The World Health Organization (WHO) declared the outbreak of swine flu A (H1N1) on June 11, 2009 as an epidemic. Antiviral drugs and vaccines are not well supplied around the world. Countries and individuals around the world have begun researching multifaceted methods to reduce the spread of the 2009 pandemic (H1N1). People have seen the benefits of wearing a mask to protect themselves from disease, which has led to multidisciplinary research to quantify the impact of using a face mask on the spread and reduction of disease.[1-4] To learn lessons about these respiratory and various infectious diseases, the general public in a community environment must conduct a comprehensive study to find reasonable and diverse evidence on the effectiveness of the use of medical and cloth-based face masks.[5] The use of a face mask for these diseases has proven to be an effective barrier against aerosol diffusion. However, since it is rarely used in some communities, doubts have been raised about its effectiveness in preventing air infection among infectious diseases. Therefore, as the use of masks increases worldwide, various studies are being conducted to determine the factors that affect the use of face masks as a major preventive health measure in the community.[6] The COVID-19 epidemic has led to a greater increase in the use of face masks. For health workers, unlike face masks worn by the general public, side effects are prone to occur after prolonged wear.[7] Medical workers' masks are an important protective equipment provided. This is because the flow resistance of the mask keeps the air close to the head when breathing, speaking, singing, coughing, or sneezing, protecting others if they are at a sufficient distance from each other. In addition, regular face masks have a low air turnover rate, which increases the risk of inhalation-based infections and requires improved filtration efficiency masks to increase the effectiveness of infection prevention.[8] Face masks can significantly

reduce the number of influenza and influenza outbreaks, and it is reported that the resulting economic loss has also been greatly reduced.[9] This is because the long-term use of a facial mask plays an important role in regulating skin function to maintain moisture in the stratum corneum of the skin's epidermis. Moisture loss gradually reduces the appearance of the skin and can lead to serious skin problems. Skin characteristics according to the study of wearing a mask should be checked. The root extract of *Lithospermum erythrorhizon* (LES) is used for a variety of skin pharmacological effects. LES is more effective at increasing skin humidity and lowering TEWL values. This is excellent for LES skin care and shows various benefits.[10,11] Lots of issues are related to skin troubles due to the wearing of a face mask. Accordingly, several studies are being conducted to analyze the bacterial community and biophysical parameters of the skin.

Therefore, this study comprehensively investigated the changes in the use of cosmetics around the world due to the increase in mask usage. It is hoped that this study will be used as an important marketing material for new changes in the cosmetic market by clearly grasping the needs of consumers in the beauty and cosmetics industry from the viewpoint of important use of masks after COVID-19 in the future.

2 | MATERIALS AND METHODS

This review paper is a literature review, and a narrative review approach has been used for this study. A total of 300–400 references were selected using representative journal search websites such as PubMed, Google Scholar, Scopus, and RISS, of which a total of 39 papers were selected in the final stage based on 2006–2021.

3 | RESULTS AND DISCUSSIONS

3.1 | The era of mask essential due to infectious diseases has arrived

In the past, face masks have traditionally been used for general infection control. Much research has been done on the effect at the population level of preventing the spread of the influenza virus. According to data from clinical studies published accordingly, the infectivity of influenza A virus was very high, and the transmission of infection contained the virus. Accordingly, it was concluded that the use of a face mask could make an important contribution to delaying the outbreak of influenza. In general, using a mask is sufficient to suppress the outbreak of influenza and can prevent disease.[12] It has been shown that there is an effect of asymptomatic infection on the face mask during pandemic influenza.[13] Large-scale infectious diseases can have serious health, social and economic consequences worldwide. The 2009 H1N1 pandemic identified the need to proactively prepare a cost-effective and easy-to-implement mitigation strategy to respond to future pandemics. As seen in this pandemic (H1N1) 2009, vaccines and antiviral agents may or may not be present in the early stages of the pandemic. It was thought that a non-previous systematic strategy was needed to reduce the spread of terrifying diseases and economic impact.[9] In addition, it was judged that evidence was necessary for the effectiveness of wearing a face mask in the community to prevent the spread of SARS-CoV-2. They reported that the mathematical model showed a significant reduction in mortality when the population mask coverage was nearly universal, regardless of the mask efficacy.[14] When an infected person speaks, coughs, or sneezes, it spreads droplets containing the virus and directly contaminates others and their surroundings within 1–2 m. Airborne radio waves may occur when performing aerosol generation procedures.[15] It is recommended that healthy and sick individuals use medical face masks to prevent the spread of respiratory infections in community settings. As such, the effectiveness of a medical face mask depends on intensive adherence and systematic practice along with preventive measures such as hand hygiene.[1] The wearing of face masks is being discussed more extensively during the ongoing COVID-19 pandemic. In particular, we implemented universal masking for most hospitals and health-care workers. The Centers for Disease Control and Prevention now recommends that the general public must also wear cloth masks and masks such as KF94 outdoors. The proper need for a mask is a defense through close contact. SARS-CoV-2 is very important in that it can prevent the virus from spreading from individuals with asymptomatic, pre-symptomatic, and mild symptoms. However, we are currently studying the effectiveness of different types of masks, such as N95 respirators, surgical masks, and cloth masks, in the context of a worldwide shortage of personal protective equipment.[16]

3.2 | Increased skin troubles due to increased use of masks

During the ongoing COVID-19, Thailand has recommended wearing a generic face mask, which investigates the prevalence and possible risk factors for preventing face mask-related skin side effects. Acne (399, 39.9%), facial rash (154, 18.4%), and itching (130, 15.6%) were the most common. Also, wearing a surgical mask has a much higher risk of skin side effects compared to a cloth mask. Also, (95% CI) = 1.54 (1.16–2.06). Research shows that wearing a mask for at least 4 h each day and reusing the mask increases the risk of skin side effects compared to daily mask replacement.[17] In addition, during the COVID-19 epidemic, 2,315 respondents conducted a study of itching caused by masks, in which the prevalence of itching on the skin associated with the use of face masks in the general public during the COVID-19 epidemic, and itching strength and clinical features were investigated. Of the respondents, 1,393 (60.4%) reported using a mask for the previous week, of which 273 (19.6%) reported that they had itching. Subjects who reported such sensitive skin and atopic predisposition and facial dermatitis (acne, atopic dermatitis) or seborrheic dermatitis had a significantly higher risk of developing itching. This was 4.07 ± 2.06 (moderate itching) for the entire

group of pruritus on the Skin Direct Itching Numerical Rating Scale. As such, it was reported that the respondents who wore a mask for a long period of time had more sporadic skin itching.[18] Skin rashes such as acne have been reported due to constant wear and blockage caused by wearing a mask.[19] As the coronavirus pandemic continues worldwide, many new skin complications are found on the faces of medical staff who wear personal protective equipment every day to treat patients. To minimize the risk of COVID-19 infection, healthcare workers are essential to wearing a strong mask that puts excessive pressure on the skin of the face. This is a reality that can inevitably cause multiple types of skin lesions such as facial dents, skin tears, post-inflammatory hyperpigmentation, ulcers, scabs, erythema, and infections such as strong mechanical pressure, mask material, and sweat.[20] The effect of wearing a mask on the skin was evaluated by dividing it according to time. This significantly changed skin temperature, redness, moisture, and sebum secretion 1–6 h after wearing the mask. Skin temperature, redness, and hydration showed a significant difference between wearing the mask and not wearing the mask. It is believed that the condition and time of wearing the mask can change various skin characteristics.[21] Statistically significant differences were found in humidity, heat, shortness of breath, and feeling of discomfort. Accordingly, the N95 respirator can generally increase the skin temperature of the face and increase the discomfort of the skin compared to a medical surgical mask.[22] In the previous study, the effect of the N95 medical mask on the physiological properties of the skin, the skin moisturizing, TEWL, and pH are significantly increased in the protective device when wearing protective equipment to observe the side effects of the skin.[23,24] Research results have reported that the incidence of adverse skin reactions of N95 masks was 95.1%.[25,26]*Research on natural products for skin soothing ingredients*

Centella asiatica is reported to be a medicinal plant widely used as a panacea from 3000 years ago. It contains pentacyclic triterpenes such as asiaticoside, madecassoside, asiatic acid, and madecassic acid, known as active compounds.[27] Centella as a whole, known as centeloids, accumulates the pentacyclic triterpenoid saponins. These terpenoids include asiaticosides, centelosides, madecassosides, brahmosides, brahminosides, thankuniside, scefoleoside, centellose, asiatic-, brahmic-, centellic-, and madecassic acids. Triterpene saponins, a common secondary plant metabolite, are additionally synthesized through the isoprenoid pathway to create a hydrophobic triterpenoid structure (aglycone) with hydrophilic sugar chains (glycones). The biological activity of saponins is because they have these components.[28] Pentacyclic triterpenes, mainly asiatic acid, madecassic acid, asiaticoside, and madecassoside, are active ingredients of Centella asiatica (L.) Urban (Apiaceae). These compounds have excellent pharmacological properties that aid in wound healing.[29] As interest in naturally derived ingredients continues to increase, the possibility of using three Ayurvedic plant extracts in preparation for skin disease management and treatment was evaluated, and accordingly, studies on antioxidant properties were conducted using DPPH and ABTS radicals. We got 76% and 88% of these radical scavenging, respectively. A significant decrease in the level of intracellular free radicals and an increase in the activity of antioxidant enzyme-superoxide dismutase were also observed by almost 60%, and the extract inhibited lipoxygenase activity by more than 70% by evaluating its anti-inflammatory and anti-aging properties. It inhibited collagenase by almost 40%. The results have shown that it is a valuable source of biologically active substances with desired properties in terms of skin cell protection.[30] Honey is suitable as a dressing for wounds and burns. Efficacy has also been demonstrated in the treatment of urinary tract, ringworm, seborrhea, dandruff, diaper dermatitis, psoriasis, hemorrhoids, and anal fissures. Because of these benefits, it exerts relief, moisturizing, soothing, and conditioning effects in cosmetic formulations. Honey keeps the skin young, delays wrinkle formation, regulates pH, and is also used for the prevention of pathogen infections.[31-33] In particular, it can also be used to complement dry skin treatment.[33] Moisturizers are a major component of basic daily skin care, especially when the epidermal barrier has been altered and the epidermal moisture content has decreased. This is an important part of a dermatologist's strategy to maintain skin health, coexist with dry skin, and treat a variety of skin diseases associated with impaired skin barrier function, such as atopic disorder and other types of dermatitis. The use of moisturizers to maintain skin health and definitive or adjuvant therapy for different types of dermatitis has been discussed.[34]

3.3 | The necessity of changing the times of makeup products

Makeup has a variety of meanings. It encompasses all three of our senses, namely, the senses of the body's surface. It was stimulated the process of becoming beautiful with sense of smell, smell and sight. This makeup will positively stimulate a variety of sensations, which can trigger not only sensations but also psychological pleasure. Reports have shown that makeup can support "impersonation" and "seduction" related to two opposing psychological profiles. The results of this study reported that women in the functional class "camouflage" were more anxious and defensive than the functional class "seduction" who appeared to be more sociable, resolute, and extroverted, indicating that they are psychologically unstable.[39] A person's facial attractiveness is the most predictive predictor of overall body attractiveness. It has been shown to be one of the major factors influencing personal self-esteem worldwide. Therefore, makeup has a very important influence in this sense. In addition, studies on women are being conducted in a variety of ways to explain why they motivate them to wear makeup. We showed high significance in the mental behavioral profile among the two makeup functions. This is because makeup has psychological characteristics.[35] There is a study comparing the faces of women with and without makeup, in which the makeup application, from a perceptual point of view, attempted to solve this problem fragmentarily using a standardized and highly controlled set of grayscale faces. This became even more attractive when makeup was applied to a woman's face. In the case of makeup conditions, the asymmetry did not change significantly. This reveals the

role of the asymmetry mechanism associated with increased attractiveness in women's makeup use.[36] The makeup, which emphasized the moisturized skin by wearing a mask continuously, was pushed out of the trend and became longer in warm regions. Fewer people are finding products in different shades. Instead, basic products and base makeup are in the limelight, with mask-proof cushions that emphasize adhesion and endurance over any function and do not stick to the mask.[37] Adapting to the era of essential masks, many women began to refrain from dark makeup and preferred the matte type, which does not embed well. The scars on the bare face and the skin around the eyes, hidden in traditional makeup, have become more focused on creating healthy skin rather than the relatively emerging formula.[38]

4 | CONCLUSIONS

This review is expected to be used as an important marketing material for new changes in the cosmetics market by clearly grasping the needs of consumers in the beauty and cosmetics industry from the viewpoint of using masks after COVID-19.

CONFLICT OF INTEREST

The authors of this manuscript do not have any conflicts of interest to disclose.

ETHICAL APPROVAL

The conducted literature review did not require the agreement of the bioethics committee.

AUTHOR CONTRIBUTIONS

JL and KHK involved in conception or design of the work, interpretation, drafted the article, and critically revised of the article. All authors finally approved the version to be published.

DATA AVAILABILITY STATEMENT

The findings of this study are available from the corresponding author upon reasonable request.

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